

Support Material

Water adsorption isotherms on fly ash from several sources

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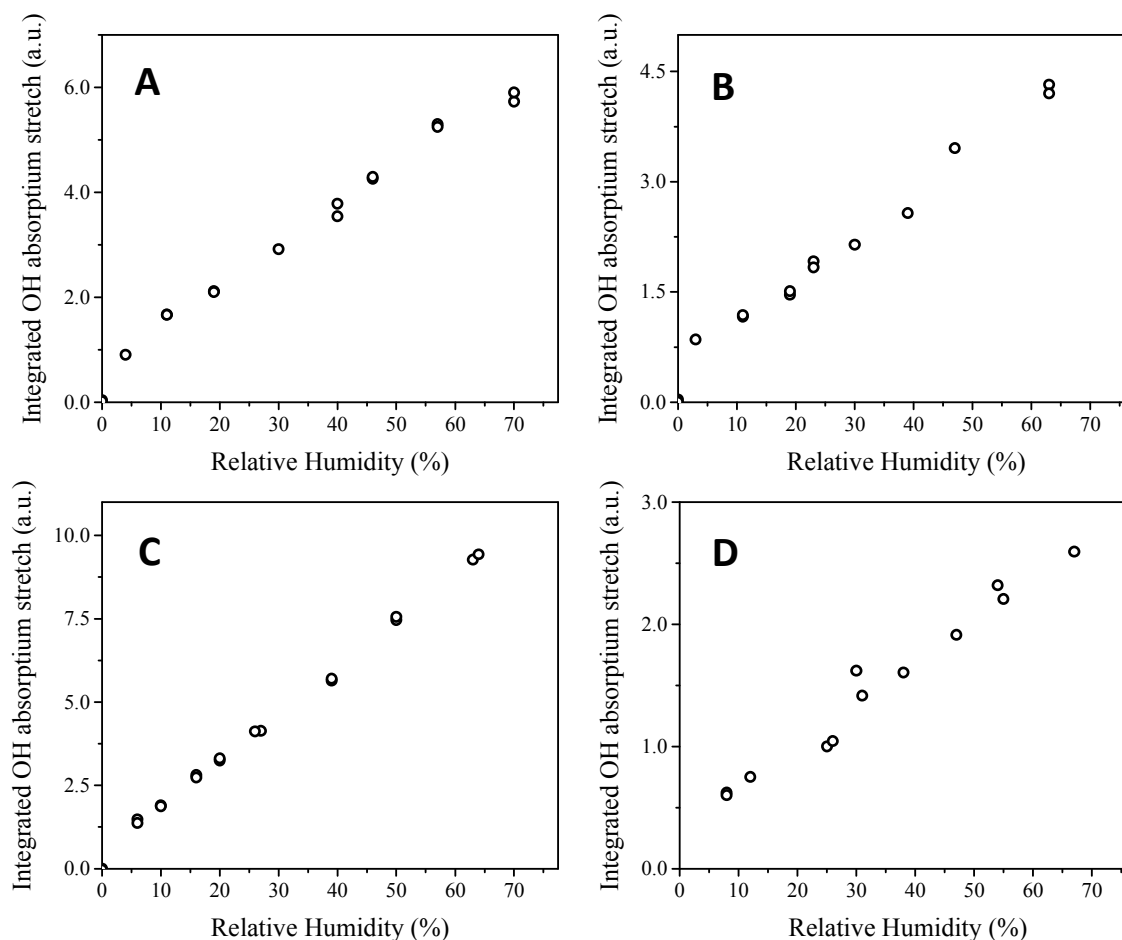


Figure S1: Qualitative trend of water adsorption on fly ash from infrared data. Integrated absorbance of the OH stretch as a function of RH. (A) United States (USFA); (B) Northeast India (INFA); (C) Netherlands (NLFA); (D) Germany (DEFA).

Upon incrementally increasing the RH, the integrated absorbance of the OH stretching band in Figure 5 shows a growing trend with adsorbed water. The multicomponent complexity of the samples and water intermolecular interactions result in a less accurate depiction of water adsorption on fly ash, rendering impossible the assumptions required for water quantification using vibrational absorption bands.

German fly ash (DEFA) trace elemental composition is summarized in Table S1. For information on other fly ash samples, see reference 4 (Borgatta J. et. al. *Environ. Chem.* 2016;13(4)).

Table S1: elemental percentage of the major crustal elements in German fly ash (DEFA). The elemental analysis omits major components Al and Si. Error represents the standard deviation over triplicate measurements

Trace Element	Mass fraction (ppm)
Fe	33800±700
Na	3740±150
Zn	580±30
Cu	176±9
Cr	192±10
Mn	479±16
Pb	262±11
Co	54±2